be given post ASCT; however, neuropathy is a significant common toxicity that required patients to stop therapy. Longer follow-up is needed to determine the duration of benefit of BLT-D maintenance. With a median follow-up of 42.5 months, the majority of patients remain alive without evidence of disease progression.

188

PERIPHERAL BLOOD CD34 COUNT CAN PREDICT SUCCESSFUL PROGENITOR CELL MOBILIZATION IN POOR MOBILIZIERS TREATED WITH PLERIXAFOR AND G-CSF

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Background: The failure rate for CD34+ cell mobilization varies from 5% in MM to 30% in NHL and HD.

Methods: We report the results of a single center experience with plerixafor + G-CSF as re-mobilization in patients whom a prior mobilization has failed. Mobilization failure was defined as inability to collect 2×10^6 CD34+ cells/kg or inability to achieve a peripheral blood CD34+ cells/μl of ≥10 and not apheresed. Re-mobilization consisted of G-CSF at 10mcg/kg/day sq on days 1–4 plus plerixafor 240 mcg/kg/day sq on the evening of day 4. Both drugs were continued daily until a goal of 5×10^6 CD34+ cells/kg was reached or a maximum of 7 aphereses. Apheresis began on day 5 regardless of the peripheral blood (pb) CD 34+ cells/μl. PB CD34+ was correlated to CD34+ harvested. In addition, we sought to determine if there was a pb CD34+ count pre or post plerixafor that would predict for a successful harvest of either 2 or 5×10^6 CD34+ cells/kg.

Results: Baseline demographics were as follows: 54 patients, 25 females: 29 males; 29 NHL, 15 MM, 6 HD and 4 AL amyloidosis. Median age was 64 years (range 30–76). Prior mobilization was predominantly G-CSF alone. Median time from prior mobilization to re-mobilization was 0.7 months (range 0.4–33 months). The median pb CD34+ cells/μl prior to plerixafor was 4.5 (range 0–25) and 12 hours post plerixafor was 11.5 (range 0–50). The median number harvested was 4.61×10^6 CD34+ cells/kg (range 0.08–9.37). 41% of patients successfully collected ≥ 5×10^6 CD34+ cells/kg and 74% collected ≥ 2×10^6 CD34+ cells/kg. PB CD34+ correlated with CD34+ harvested on a daily basis ($p < 0.0001$). PB CD34+ pre and post plerixafor was able to predict success of collection (see table).

PB CD34+ cells/μl	% success ≥2×10^6 CD34+ cells/kg	% success ≥5×10^6 CD34+ cells/kg
Pre-Plerixafor		
<5	56%	25%
5–10	100%	64%
Post Plerixafor		
<5	15%	8%
5–10	83%	8%
>10	97%	69%

Conclusion: The combination of plerixafor and G-CSF effectively mobilizes CD34+ cells in the majority of pts, in whom a prior mobilization has failed. PB CD34+ remains an important predictor of CD34+ harvested. PB CD34+ pre-plerixafor of ≥5 cells/ μl is associated with a 100% success rate.

189

USE OF SECOND AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANTS FOR THE TREATMENT OF MULTIPLE MYELOMA

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Introduction: In patients with newly diagnosed multiple myeloma who are candidates for autologous stem cell transplant (ASCT), it is often recommended to proceed straight to ASCT after a response to initial induction therapy as a way of prolonging progression free survival compared to chemotherapy alone. Second (tandem) ASCTs have been routinely performed in patients with less than a very good partial response to first transplant, since data has shown improved survival in this subset of patients. We were interested in reviewing the number of patients who had received single or tandem ASCTs for multiple myeloma, and to evaluate factors influencing the decision of whether or not to proceed to a second ASCT.

Methods: This is a single institution retrospective review of patients who have received an ASCT for multiple myeloma from 1 Jan 2000 until 15 April 2008 at San Antonio Military Medical Center South in San Antonio, TX. Data was collected regarding patient age, stage, performance status, cytogenetics, lactate dehydrogenase, beta -2- microglobulin and albumin levels at diagnosis, treatment given, number of cells harvested and number and type of transplants received as well as response to each transplant.

Results: Seventeen of 81 patients (21%) who received one ASCT for the diagnosis of multiple myeloma went on to receive a second ASCT.

Discussion: Seventy-nine percent of patients at our institution during the specified times did not receive a tandem ASCT for multiple myeloma. Patient and disease factors which may have influenced the decision of whether to proceed to a second ASCT are discussed. Since many patients do not receive the second transplant, and with the cost of and space required to store unused harvested cells as well as the time and effort required of patients to collect enough cells for two transplants, this data may help reduce initial over collection of hematopoietic stem cells.

190

SELECTIVE T-CELL IMMUNOTHERAPY FOR B-CELL LYMPHOMA UNDER HYPOXIA

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Many tumors harbor chronic and intermittent hypoxic cellular niches giving a survival advantage to malignant cells including cancer stem cells. To achieve a successful immunotherapeutic response, T cells must overcome physiological challenges specific to the tumor microenvironment such as hypoxia. To exploit the hypoxic tumor microenvironment, we introduce a new approach that exploits hypoxia as a condition for T-cell activation. In addition, this approach may be used to limit off-target effects to normal cells expressing antigen under normoxia. We demonstrate that a chimeric antigen receptor (CAR), which is specific for CD19, expressed on malignant and normal B cells, can be conditionally expressed in a strictly oxygen-sensitive manner. Using the *Sleeping Beauty* transposon/transposase system, we can achieve stable, persistent CAR transgene expression from DNA plasmids without the expense and complexity of retroviral production. Cell surface expression of our CAR is high at 1% O_2 and not detectable at 20% O_2. This oxygen-sensitive CAR is designed to deactivate when T cells circulate out of hypoxic tumor microenvironments to minimize deleterious off-target effects *in vivo*. When supplemented with one or more survival factors and/or homing receptors, this approach to CAR expression has the advantage of transforming hypoxia from an adverse factor to a T-cell triggering mechanism. This is expected to be of broad interest as investigators implement T-cell immunotherapy to eliminate tumors from the hypoxic niche as well as develop approaches that limit T-cell targeting within desired microenvironments thereby decreasing the possibility of inadvertent targeting of normal tissues.

191

CONTINUED M PROTEIN RESPONSES BEYOND DAY 100 AFTER AUTOLOGOUS TRANSPLANTATION FOR MYELOMA: IMPLICATIONS FOR POST TRANSPLANT STRATEGIES

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Background: Patients undergoing autologous stem cell transplantation (SCT) for myeloma usually undergo disease evaluation approximately 100 days after the SCT. Decisions regarding post